

To Shake or Not to Shake: Can Bacterial Cross-contamination Occur from Handshaking in Healthcare Settings?

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Bacterial Contamination Transferred Through Handshaking

Transfer of bacteria through handshaking in the clinical setting is an issue of concern and warranting investigation. Handshaking may be a likely mode for transmission of microorganisms [1]. Transfer of pathogenic microorganisms in the clinical environment is important because healthcare professionals and students are at risk. Contamination from instruments that can become vectors of cross-infection [2,3] may harbor pathogens such as *Streptococcus pneumoniae*, *Mycobacterium tuberculosis*, *Escherichia coli*, *Klebsiella pneumoniae*, *Legionella pneumophila* and *Pseudomonas aeruginosa* which have been implicated in cross-contamination [4]. Sklansky [5] proposed banning the handshake from the health care setting.

Handshaking a cultural tradition that has evolved over centuries as a general gesture of peace [6] may serve as a route for transfer of microorganisms via the hands of healthcare workers, and students. Survivals of bacteria on the hands vary among pathogens. Studies done in the environmental setting show that handshaking can actually transfer pathogens [7]. Even spores of *Clostridium difficile* have been shown to be transferred via handshaking [5] as have *Enterobacteriaceae*, *Pseudomonas* and *Staphylococcus aureus* [8]. Bacterial contamination in the ward has been shown to be less with "fist bumping" as compared with handshaking. The WHO states hand-transmitted bacteria are still abundant in hospitals [9].

We recently undertook a study wherein we initially swabbed 76 students upon entry to the ward and again after shaking hands with their classmates and colleagues. After taking samples and culturing we observed *Staphylococcus epidermidis*, *Micrococcus* and *Peptostreptococcus* in 100, 39.5 and 32.9% of the subjects, respectively. *Staphylococcus aureus*, *Bacillus* Spores, *Actinomyces* and *Klebsiella* were detected in 30.3, 23.7, 13.15 and 13.15% of the students, respectively. Transfer of bacterial contamination after handshaking significantly increased for *Staphylococcus epidermidis* from 93.4 to 97% ($P < 0.001$). *Bacillus anthracis* and *Micrococcus* increased from 39.5 to 89.5% and 32.9 to 83.9%, respectively ($P < 0.001$). Bacterial contamination for *Peptostreptococcus* increased from 30.3 to 80.3%, *Staphylococcus aureus* 23.7 to 40.8%, Spore *Bacillus* 13.15 to 22.4%, *Klebsiella* 13.15 to 22.4 and *Actinomyces* 13.15 to 18.4%. These results suggest that handshaking can indeed be a mode of microbial transfer and bacterial cross-contamination which may be dangerous especially in immunocompromised subjects.

References

1. WHO. Guide to Implementation of the WHO Multimodal Hand Hygiene Improvement Strategy. Geneva: World Health Organization; 2009.
2. Coelho VHM, Venâncio GN, Cestari TF, de Almeida MEA, da Cruz, et al. Microbial contamination of a University dental clinic in Brazil. Braz J Oral Sci. 2016 Dec;15(4):248-251.
3. Monistrol O, Calbo E, Riera M, Nicolás C, Font R, et al. Impact of a hand hygiene educational programme on hospital-acquired infections in medical wards. Clin Microbiol Infect. 2012 Dec;18(12):1212-1218.
4. Pasquarella C, Veronesi L, Castiglia P, Liguori G, Montagna MT, et al. Italian multicentre study on microbial environmental contamination in dental clinics: a pilot study. Sci Total Environ. 2010 Sep;408(19):4045-4051.

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5. Sklansky M, Nadkarni N, Ramirez-Avila L. Banning the handshake from the health care setting. *JAMA*. 2014 Jun;311(24):2477-2478.
6. Erasmus V, Daha TJ, Brug H, Richardus JH, Behrendt MD, et al. Systematic review of studies on compliance with hand hygiene guidelines in hospital care. *Infect Control Hosp Epidemiol*. 2010 Mar;31(3):283-294.
7. Jabbar U, Leischner J, Kasper D, Gerber R, Sambol SP, et al. Effectiveness of alcohol-based hand rubs for removal of *Clostridium difficile* spores from hands. *Infect Control Hosp Epidemiol*. 2010 Jun;31(6):565-570.
8. Monistrol O, López ML, Riera M, Font R, Nicola' s C, et al. Hand contamination during routine care in medical wards: the role of hand hygiene compliance. *J Med Microbiol*. 2013 Apr;62(Pt 4):623-629.
9. Ghareeb PA, Bourlai T, Dutton W, McClellan WT. Reducing pathogen transmission in a hospital setting: handshake versus fist bump: a pilot study. *J Hosp Infect*. 2013 Dec;85(4):321-323.